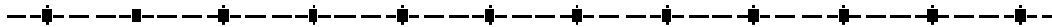


Snow Measurement Guidelines



Each season before the first snows come: Review these instructions for measuring snow. It is easy to forget what needs to be measured, especially in those parts of the country where snow falls infrequently.

- ☀ At the beginning of each snowfall/freezing season, remove the funnel and inner measuring tube of the eight-inch manual rain gauge to expose the 8-inch diameter overflow can so that it can more accurately catch frozen precipitation.
- ☀ Put your snowboard(s) out and mark their location with a flag or some other indicator so they can be found after a new snowfall. They should be located in the vicinity of your station in an open location (not under trees, obstructions, or on the north side of structures in the shadows).
- ☀ Check your gauge to make sure there are no leaks. If there are leaks, take appropriate action.
- ☀ Once your equipment has been readied for winter you are prepared for taking snowfall measurements.

Observers should determine three values when reporting solid precipitation. They are:

1. Measure and record the snowfall (**snow, ice pellets**) since the previous snowfall observation,
2. Determine the depth of snow on the ground at the normal observation time,
3. Measure and record the water equivalent of snowfall since the previous day's observation.

Measure and record the greatest amount of snowfall that has accumulated on your snowboard (wooden deck or ground if board is not available) since the previous snowfall observation. This measurement should be taken minimally once-a-day but can be taken up to four times a day, (every 6 hours) and should reflect the greatest accumulation of new snow observed (in inches and tenths, for example, 3.9 inches) since the last snowfall observation.

Snowfall amounts can be measured hourly or at any interval as long as the snow measurement board is NOT cleared more frequently than once every 6 hours.

If you are not available to watch snow accumulation at all times of the day and night, use your best estimate, based on a measurement of snowfall at the scheduled time of observation along with knowledge of what took place during the past 24 hours. If you are not present to witness the greatest snow accumulation, input may be obtained from other people who were near the station during the snow event. If your observation is not based on a measurement, record in your remarks that the "snow amount based on estimate".

Remember, you want to report the greatest accumulation since the last observation. If snowfall occurred several times during the period, and each snowfall melted either completely or in part before the next snowfall, record the total of the greatest snow depths of each event and enter in your remarks "snowfall melted during the OBS period". For example, three separate snow squalls affect your station during your 24-hour reporting day, say 3.0, 2.2, and 1.5 inches. The snow from each event melts off before the next accumulation and no snow is on the ground at your scheduled time of observation. The total snowfall for that reporting 24-hour day is the sum of the three separate snow squalls, 6.7 inches, even though the snow depth on your board at observation time was zero. Snow often melts as it lands. If snow continually melts as it lands, and the accumulation never reaches 0.1 inches on your measuring surface, snowfall should be recorded as a trace (T) and record in your remarks that the "snow melted as it landed".

Note: Snowfall, the depth of newly fallen snow since the last scheduled observation, is not measured directly in the rain overflow can. Instead, snowfall is ordinarily measured on a nearby grassy surface a short distance away from the rain can.

It is essential to measure snowfall (and snow depth) in locations where the effects of blowing and drifting are minimized. Finding a good location where snow accumulates uniformly simplifies all other aspects of the observation and reduces the numerous opportunities for error. In open areas where windblown snow cannot be avoided, several measurements may often be necessary to obtain an average depth and they should not

include the largest drifts. In heavily forested locations, try and find an exposed clearing in the trees. Measurements beneath trees are inaccurate since large amounts of snow can accumulate on trees and never reach the ground.

If your daily schedule permits, you may wish to make a snowfall observation every 6-hours, beginning with your regularly scheduled time of observation. This is the procedure followed by National Weather Service Forecast Offices. Follow the same rules for a once-a-day observation, but the snow accumulation reported will be the greatest for the previous six hours instead of 24 hours. If you take your observations at this frequency, make sure that you clear your snowboard (or other measuring surface) no more than once every 6 hours. Record the frequency of observations during the day in the comments section of your report. Never sum more than four, six-hourly observations to determine your 24-hour snowfall total. If you use more than four observations, it would falsely increase snowfall totals.

Freezing rain (glaze ice) should never be reported as snowfall. This precipitation type is liquid precipitation and should be reported as such.

1. Determine the total depth of snow, ice pellets, or ice on the ground. This observation is taken once-a-day at the scheduled time of observation with a measuring stick. It is taken by measuring the total depth of snow on exposed ground at a permanently-mounted snow stake or by taking the average of several depth readings at or near the normal point of observation with a measuring stick. When using a measuring stick, make sure the stick is pushed vertically into the snow until the bottom of the stick rests on the ground. Do not mistake an ice layer or crusted snow as "ground". The measurement should reflect the average depth of snow, ice pellets, and glaze ice on the ground at your usual measurement site (not disturbed by human activities). Measurements from rooftops, paved areas, and the like should not be made. **Note:** Hail accumulation is not entered with snow and ice pellets. Hail accumulation is entered in the **"/remarks"** section with the amount and diameter (inches and tenths) of the stones.

Report snow depth to the nearest whole inch, rounding up when one-half inch increments are reached (example 0.4 inches gets reported as a trace (T), 3.5 inches gets reported as 4 inches). Frequently, in hilly or mountainous terrain, you will be faced with the situation where no snow is observed on south-facing slopes while snow, possibly deep, remains in shaded or north-facing areas. Under these circumstances, you should use good judgement to visually average and then measure snow depths in exposed areas at several locations surrounding the weather station.

For example, if half the exposed ground is bare and half is covered with six inches of snow, the snow depth should be entered as the average of the two readings, or three inches. When in your judgement, less than 50 percent of the exposed ground is covered by snow, even though the covered areas have a significant depth, the snow depth should be recorded as a trace (T). When no snow or ice is on the ground in exposed areas (snow may be present in surrounding forested or otherwise protected areas), record a "0".

When strong winds have blown the snow, take several measurements where the snow was least affected by drifting and average them. If most exposed areas are either blown free of snow while others have drifts, again try to combine visual averaging with measurements to make your estimate.

2. Measuring the water equivalent of snowfall since the previous day's observation. This measurement is taken once-a-day at your specified time of observation. Melt the contents of your gauge (by bringing it inside your home or adding a measured amount of warm water) and then pour the liquid into the funnel and smaller inner measuring tube and measure the amount to the nearest .01 inch (use NWS provided measuring stick) just as you use for measuring rainfall. Do not measure the melted precipitation directly in the large 8-inch outer cylinder. Make sure the inner measuring tube can't fall over when pouring the liquid back into it. If the melted water equivalent (including any added warm water) exceeds two inches and cannot fit into the measuring tube all at one time, then empty the full measuring tube and pour the remaining liquid from the large 8-inch outer cylinder into the emptied measuring tube. Then, add and record the water equivalent of the multiple measurements.

If you added warm water to the gauge to melt the snow, make sure you accurately measure the amount of warm water added before pouring it into the gauge. Then, when you take your liquid measurement, subtract the amount of warm water added from the total liquid measurement to get

your final liquid water equivalent of the snowfall.

As winds increase, gauges collect less and less of the precipitation that actually falls. Generally speaking, the stronger the wind and the drier the snow, the less is captured in the gauge. If you notice that less snow is in the gauge than accumulated on the ground, you should first empty any existing snow from inside the 8-inch cylinder, then use it to take a snow sample, sometimes referred to as "take a core" or "cut a biscuit" from your snow board with the 8-inch overflow can. Melt the biscuit of snow, pour the liquid into the small measuring tube to measure the water equivalent.